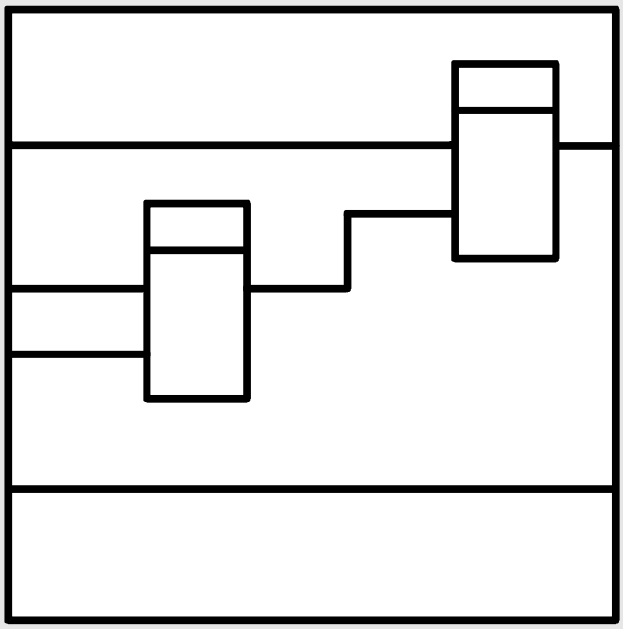
SIMADYN D
Digital Control System

User Manual

SS52 Interface Module



Edition 04.97

DK-No. 247463

User Manual, SS52 Interface Module

Edition		Status
1	SS52 Interface Module	02.96
2	SS52 Interface Module	04.97

We have checked the contents of this Manual to ensure that they coincide with the described hardware and software. However, deviations cannot be completely ruled-out, so we cannot guarantee complete conformance. However, the information in this document is regularly checked and the necessary corrections included in subsequent editions. We are thankful for any recommendations or suggestions.

Contents

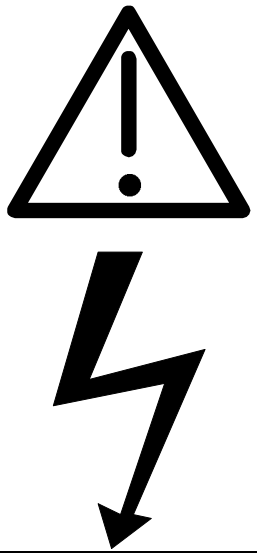
N O T E !

The information in this Manual does not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, please contact your local Siemens office.

Further, the contents of this Manual shall neither become a part of nor modify any prior or existing agreement, committment or relationship. The sales contract contains the entire obligation of Siemens. The warranty contained in the contract between the parties is the sole warranty of Siemens. Any statements contained herein do not create new warranties nor modify the existing warranty.

1. Warning information



W A R N I N G !

Electrical equipment has components which are at dangerous voltage levels.

If these instructions are not strictly adhered to, this can result in severe bodily injury and material damage.

Only appropriately qualified personnel may work on this equipment or in its vicinity.

This personnel must be completely knowledgeable about all the warnings and service measures according to this User Manual.

The successful and safe operation of this equipment is dependent on proper handling, installation, operation and maintenance.

Definitions

* **QUALIFIED PERSONNEL**

For the purpose of this User Manual and product labels, a „Qualified person“ is someone who is familiar with the installation, mounting, start-up and operation of the equipment and the hazards involved. He or she must have the following qualifications:

1. Trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety procedures.
2. Trained in the proper care and use of protective equipment in accordance with established safety procedures.
3. Trained in rendering first aid.

* **DANGER**

For the purpose of this User Manual and product labels, „Danger“ indicates death, severe personal injury and/or substantial property damage will result if proper precautions are not taken.

* **WARNING**

For the purpose of this User Manual and product labels, „Warning“ indicates death, severe personal injury or property damage can result if proper precautions are not taken.

* **CAUTION**

For the purpose of this User Manual and product labels, „Caution“ indicates that minor personal injury or material damage can result if proper precautions are not taken.

* **NOTE**

For the purpose of this User Manual, „Note“ indicates information about the product or the respective part of the User Manual which is essential to highlight.

C A U T I O N !

This board contains components which can be destroyed by electrostatic discharge. Prior to touching any electronics board, your body must be electrically discharged. This can be simply done by touching a conductive, grounded object immediately beforehand (e.g. bare metal cabinet components, socket protective conductor contact).

W A R N I N G !

Hazardous voltages are present in this electrical equipment during operation.

Non-observance of the safety instructions can result in severe personal injury or property damage.

It is especially important that the warning information in all of the relevant Operating Instructions are strictly observed.

2. Ordering data

SS52: 6DD1688-0AE2 SS52 interface board

3. Description

The SS52 board is an interface board for the SINEC L2 DP PROFIBUS protocol. It is inserted into one of the three slots of the CS7 subrack, corresponding to the actual configuration. A maximum of three modules can be inserted in each support board.
The interface module has a serial RS485 interface conforming to the PROFIBUS Standard. This interface is floating (electrically isolated). The interface is physically located at the 9-pin sub-D socket connector X5.

The connection to the support board is established via the CS7-SS4/SS5 /1/parallel interface at the 48-pin plug connector X1. In addition to the data-, address- and control bus, this connection is also used to connect the, +5 V, +15 V and -15V module power supply. Data transfer with the processor boards is realized via a 16-kbyte dual port RAM, which is located on the support board.

A double test socket and a double LED, assigned to each slot, are provided on the support board.

The LEDs have the following function:

	LEDs:	
	H10 / H20 / H30	*H11 / H21 / H31*
bright/dark/ flashing	(Significance of the function, refer to: „PROFIBUS DP“) Instruction Manual	

In addition to the reset function by the power supply, a local reset can be initiated by short-circuiting (jumpering) the two test sockets at the processor of the appropriate interface module This function has no effect on the remaining subrack. It is required for the software test and fault finding. During normal operation it is **not** permissible to initiate a reset using these sockets.

PROFIBUS interface operation is indicated by an LED on the interface module. It is used for fault finding and commissioning, and is not externally visible in normal operation when the module is inserted. It has the following function:

LED:		Function:
H1	bright:	PROFIBUS interface operation
	dark:	PROFIBUS interface not operational

There is an 80-pin test connector X20 on the board for hardware diagnostics using a logic analyzer.

Correct hardware functioning is monitored using a "watchdog ".

4. Board design

The board has the following hardware components.

- 80C186 processor (20 MHz)
- EPROM (256 kbyte) with firmware
- Local processor RAM (256 kbyte)
- Parallel interface to the support board
- RS485 serial interface
- Watchdog for NMI monitoring
- LED for the operating display of the PROFIBUS interface
- Diagnostics connector for the logic analyzer
- Diagnostics functionality using the hexadecimal monitor

5. Serial interfaces

5.1. SINEC L2 DP

The connection is either realized via the SINEC L2 bus terminal or the SINEC L2 bus connector at the 9-pin Sub D socket connector X5. When using the RS485 bus terminal, the cable capacitance must be taken into account, dependent on the baud rate. Both the bus terminal as well as the bus connector have a terminating resistor which can be switched-in.

Please refer to the „SINEC Industrial Communications Catalog IK10 1996“ for information regarding SINEC L2 DP as well as the components required to configure a bus system.

5.2. Monitor interface

A hexadecimal monitor runs in parallel on the SS52 in the background. Parameter data of the PROFIBUS are loaded using the hexadecimal monitor. When a fault/error condition develops, diagnostics is possible via the hexadecimal monitor so that they can be quickly localized and removed. For space reasons, this interface is located at the same connector as for the PROFIBUS interface.

The monitor interface is an RS232 interface and cannot be modified.

6. Application information

The interface module can be configured in any slot of the CS7 subrack. A maximum of three interface modules can be configured for each CS7. No specific sequence has to be followed.

The board must be screwed to the guide rails for perfect functioning, even during start-up.

If the board is inserted in an adapter, the front panel must be connected to the rack housing through a short cable.

The board may neither be inserted nor withdrawn under voltage.

7. Shielding

The bus cable shield must be grounded, through the largest possible surface area, where the cable enters the cabinet. The cable shield must be connected to the grounding rail where the cable enters the cabinet. Further, the shield in the connector housing must be connected to the housing. The connector must be screwed to the module.

The SIMADYN D EMC Directives and Installation Guidelines /2/ are valid.

8. Additional components

Designation:	**MLFB:**
CS7 subrack	6DD1662-0AB0
Following data and additional bus components (e.g. fiber-optic cables) refer to Catalogs IK10 and ST76 (1996)	
SINEC L2 bus cable (e.g.:)	6XV1830-0AH10
SINEC L2 DP connector 12 Mbaud (e.g.:)	6ES7972-0BA20-0XA0

9. Technical data

INSULATION GROUP:	A acc. to VDE 0110 Paragraph 13 Group 2 at 24 V DC, 15 V DC, 5 V DC
AMBIENT TEMPERATURE:	0 to +55 degrees C for self-cooling
STORAGE TEMPERATURE:	-40 to + 70 degrees C
HUMIDITY CLASS:	F acc. to DIN 40040
ALTITUDE RATING:	S acc. to DIN 40040
MECHANICAL STRESSING:	Mounted in stationary but not necessarily vibration-free equipment
PACKAGING SYSTEM:	Installed in the slot in the CS7 subrack
DIMENSIONS:	184 * 65 mm
WEIGHT:	0.5 kg
CURRENT DRAIN:	P5: 0.7 A
	P15: 10 mA
	N15: 10 mA

10. Connector assignment of the interfaces

10.1. Serial interface X5

X5 (9-pin Sub D socket connector)

Pin	Designation	Explanation
1	----	----
2	TxD	Receive signal, monitor
3	PRFTR +	Receive- and send signal +
4	RTS	Ready to send
5	M5EXT	External ground
6	P5EXT	P5 external
7	RxD	Send signal, monitor
8	PRFTR -	receive- and send signal -
9	RTS	Ready to send

10.2. Parallel interface CS7 - SS4/SS5

X1 (48-pole connector)

Pin	A	B	C
1	P5	P5	L_LOCK
2	AB1	AB2	AB3
3	AB4	AB5	AB6
4	AB7	AB8	AB9
5	AB10	AB11	AB12
6	L_RESET	CTCLK	AB13
7	DB0	DB1	DB2
8	DB3	DB4	DB5
9	DB6	DB7	DB8
10	DB9	DB10	DB11
11	DB12	DB13	DB14
12	DB15	L_DEN	L_CSMSB
13	L_INTDPR	DT_L_R	L_CSLSB
14	L_RDYDPR	L_LED1	L_LED2
15	P15	N15	L_INTUHR
16	M5	M5	M5

11. STRUC L mask of the SS52 board in the master program

STRUC L mask

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100       :SS52              " PROFIBUS DP interface module"
101       ************************************************************
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12. Others

12.1. Literature

/1/ DK.No.: 21.43.10
Parallel interface CS7 - SS4/SS5

/2/ DK.No.: 20.10.60
EMC Directives, Installation Guidelines

12.2. Attachments

12.2.1. Layout diagram

Layout diagram 3SE.465 688.9004.22 AO

12.2.2. Dimension drawing

Dimension drawing 3SE.465 688.9004.22 MB

12.2.3. Block diagram

Block diagram Fig. 1

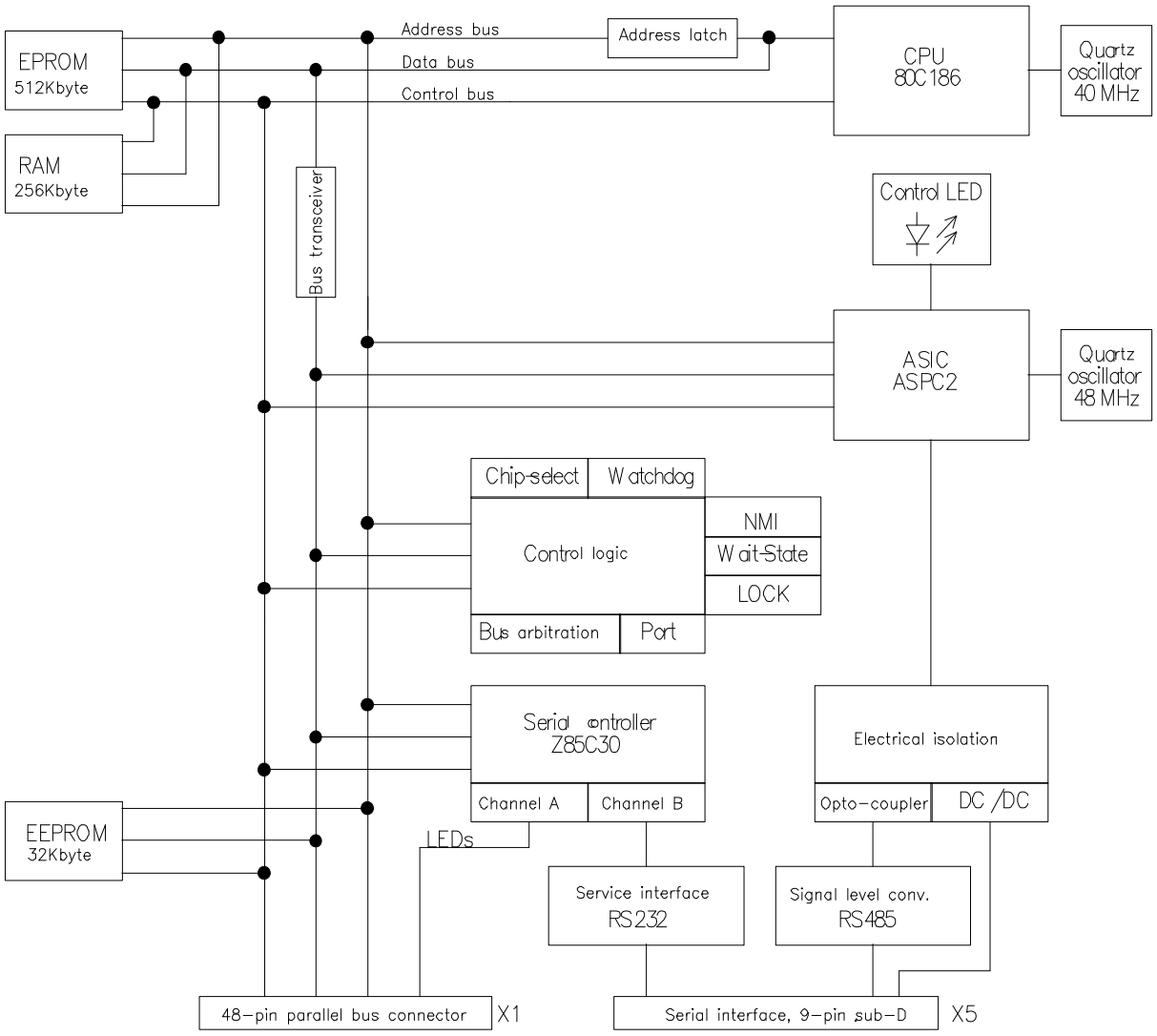


Fig. 1: SS52 block diagram

13. ESD instructions

Components which can be destroyed by electrostatic discharge (ESD)

Generally, electronic boards should only be touched when absolutely necessary.

The human body must be electrically discharged before touching an electronics board. This can be simply done by touching a conductive, grounded object directly beforehand (e.g. bare metal cubicle components, socket outlet protective conductor contact).

Boards may not come into contact with highly-insulating materials - e.g. plastic foils, insulated desktops, articles of clothing manufactured from man-made fibers.

Boards may only be placed on conductive surfaces.

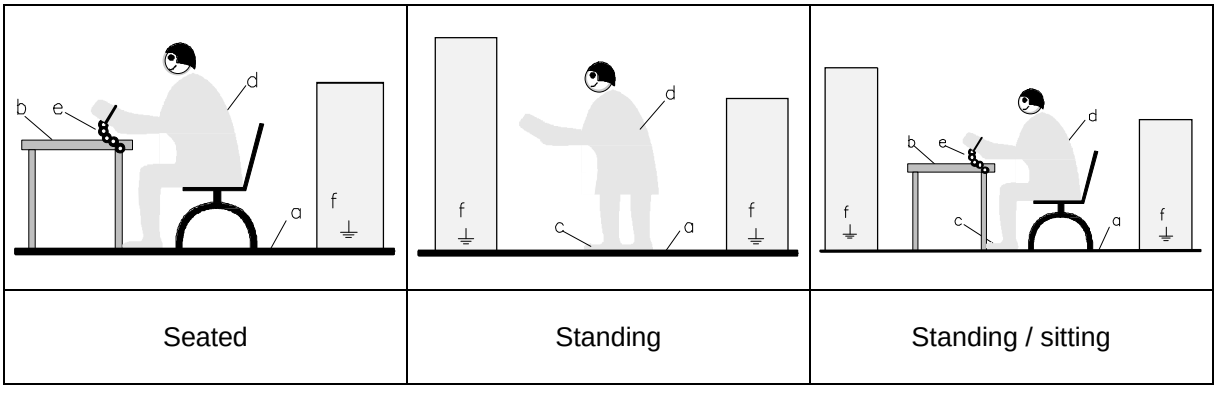
When soldering, the soldering iron tip must be grounded.

Boards and components should only be stored and transported in conductive packaging (e.g. metalized plastic boxes, metal containers).

If the packing material is not conductive, the boards must be wrapped with a conductive packing material, e.g. conductive foam rubber or household aluminum foil.

The necessary ESD protective measures are clearly shown in the following diagram.

a = Conductive floor surface
b = ESD table
c = ESD shoes
d = ESD overall
e = ESD chain
f = Cabinet ground connection



Seated	Standing	Standing / sitting

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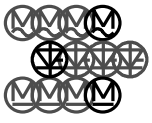

System-Based
Drive
Technology